REMARKS

By this Amendment, independent claims 1, 5, 21 and 27 have been amended to better define the invention. It is submitted that the present application is in condition for allowance for the following reasons.

In the *Claims Rejection – 35 USC § 103* section of the outstanding Office Action, all of the pending claims were rejected as being unpatentable over the Zimmerman patent. However, for the following reasons, it is submitted that amended independent claims 1, 5, 21 and 27, as well as the claims dependent therefrom, are all allowable over this reference.

In amended independent claim 1, it is now further recited that the step of optically determining position is accomplished using "at least one TV camera", and that this step is "electro-optically" made.

In the Zimmerman patent, there is disclosed a computer data entry and manipulation apparatus including a glove assembly 12 electrically coupled via an electric cable 13 to an interface circuit 14. The interface circuit is in turn connected to a port of the associated computer having a display screen 28. The glove assembly contains sensors that detect flexing of the fingers of the user or other hand gestures. The glove assembly also includes one or more ultrasonic transducers 17 for transmitting signals to receivers 20 located around the display screen 28, so that the spatial position of the glove assembly 12 with respect to display screen 28 can be determined – so that the display screen can display a "graphical representation of the operator's hand" (as associated with the glove assembly) on the display screen. This determination is made by measuring a time delay between a transmission of an ultrasonic signal by the (each

successive?) transducer 17 and a reception of the signal by receivers 20. These transducers also require a wire connection to the computer, for power as well as for an initiation signal (for the timing measurement to be made). Such a wire connection is obviously quite inhibiting unless movement is restricted to a small area and quick movements are not anticipated. In use, a virtual object is displayed on the display screen 28. The user's hand movements in the glove assembly as well as with the glove assembly control the movement of a cursor on the display screen 28 relative to the object displayed on the screen (such as a keyboard). Thus, typing or the like can be mimicked by the user relative to the displayed keyboard and position of the cursor thereon.

In the Action, the examiner has noted that the Zimmerman patent does not teach optically determining position as was previously claimed. However, the examiner further noted that the Zimmerman patent does disclose that the glove of the Zimmerman patent can have the following.

- determination of the hand orientation (which is different from position!) by a "bubble gauge read electro-optically" (column 5, lines 31-32).
- determination of "the degree of bend of each of the fingers and thumb" (which is also different from position!) by an optical flex sensor (column 4, lines 24-25). The optical flex sensor includes a light source 44, an interior reflective tube 42 which bends with the associated finger, and a photosensitive detector 46.

Based on these disclosures, the examiner then stated that it would be obvious "to use Zimmerman's glove assembly with respect to optical transmission which is used for

detecting the flexing of the fingers". Applicant is not sure what the examiner means by this statement. Possibly the examiner meant that data could be optically transmitted to the interface circuit or computer from the glove; but why one would do so in view of the difficulties with optical transmission and the specific disclosure of a photosensitive detector at the glove which would be needed in any event is uncertain.

Next, the examiner stated that

> [o]ne would be motivated in view of the suggestion that the use of glove assembly using optical transmission is the same as the desired optical determination".

Applicant is unable to understand this sentence, as it is grammatically improper (possibly the result of an inadvertent deletion of intervening parts/sentences?). It is believed that the examiner may have been trying to say that such an optical transmission as proposed would then read on the optical determining step of the claims.

It is not considered by applicant that anyone of ordinary skill would consider that anything using light (including a flexing or an orientation determination) would be equivalent to the claimed step of "optically determining a position" in the context of the present invention and disclosure. However, to make certain that this distinction is well-presented in the claims, claim 1 (and in the remaining independent claims) has been amended to further recite that the claimed step of "optically determining a position" is accomplished "using at least one TV camera".

Nowhere in the Zimmerman patent is it taught or suggested that a TV camera be used for determining flexure or orientation, much less for determining position as

claimed. In fact, the opposite is taught; that position sensing and flex sensing is made "without using a TV camera" (claim 40).

Therefore, in view of all of the above, it is submitted that amended independent claim 1 is not made obvious by the Zimmerman patent so that claim 1 is allowable over this reference. For these same reasons, it is submitted that claims 2-4 dependent therefrom are similarly allowable.

In amended independent claim 5, it is claimed that the step of "determining the location of" the point(s) of the object occurs only after the image of the object is obtained "using at least one TV camera". As noted above, the Zimmerman patent does not disclose but in fact teaches away from the use of a TV camera. Further, it is evident that nowhere in the Zimmerman patent is there a teaching related to use of an image obtained by a TV camera. Therefore, for all of these reasons and for the same reasons as noted above for claim 1, independent claim 5 is not made obvious by the Zimmerman patent. Thus, independent claim 5 and claims 6-20 dependent therefrom are all allowable over this reference.

In amended independent claim 21, it is claimed that the step of "obtaining ... one or more images" is accomplished "using at least one TV camera". This recitation is similar to that of independent claim 5. In addition, it is further claimed in claim 21 that images of both the person playing the game and an object of that game are obtained. The Zimmerman patent also does not make obvious the imaging of both persons and objects as claimed. Therefore, for all of these reasons and for the same reasons as noted above for claim 5 (and 1), independent claim 21 is not made obvious by the

Zimmerman patent. Thus, independent claim 21 and claim 22 dependent therefrom are all allowable over this reference.

As in amended claim 21, in amended independent claim 27, it is claimed that the step of "obtaining ... one or more images" is accomplished "using at least one TV camera". In addition, it is claimed that the display of the present invention is controlled as a function of the location of the person/object in relation to the displayed image on the screen. Such a direct relationship between a displayed image and a person/object is also neither taught or made obvious by the Zimmerman patent. Therefore, for all of these reasons and for the same reasons as noted above for claim 21 (and 5 and 1), independent claim 27 is not made obvious by the Zimmerman patent. Thus, independent claim 27 is allowable over this reference.

The remaining references which were cited but not applied have been reviewed but are not believed to be pertinent to the patentability of the present invention.

For all of the foregoing reasons, it is submitted that the present application is in condition for allowance and such action is solicited.

ATTACHMENT
Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (currently amended) A method of life like computer gaming or simulation comprising the steps of:

providing a computer controlled display screen having an extensive surface;

electro-optically determining, using at least one TV camera, a position of one or more points on a user or an object;

providing data input relative to the determined position to said computer; and

controlling a displayed image provided on said screen with said computer in response to said determined position of said user or object.

2. (currently amended) A method according to claim 1, wherein said determining step is accomplished with ~~one or~~ more than one TV cameras~~.~~

3. (original) A method according to claim 2, wherein said cameras are located proximate said display screen.

4. (original) A method according to claim 1, wherein said displayed image is substantially lifesize.

5. (currently amended) A method of gaming or simulation comprising the steps of:

providing a screen or other surface on which video images are displayed;

obtaining, using at least one TV camera, one or more ~~optical~~ images containing data concerning ~~(a)~~ one or more ~~persons playing the game or simulation, or (b)~~ objects used in said game or simulation;

from said image data, determining the location of one or more points on said ~~persons or~~ one or more objects;

from said determined locations, determining at least one game parameter; and

using said game parameter, changing an audio or video display characteristic of the game or simulation.

6. (original) A method according to claim 5, wherein said data is an x and y location of a projectile object hit on said screen.

7. (original) A method according to claim 5, wherein location of a point on an article of clothing worn by a person is determined.

8. (original) A method according to claim 5, including the further step of providing an overlay on the screen indicative of some other gaming or simulation attributes.

9. (original) A method according to claim 5, wherein said screen is a projection TV screen.

10. (original) A method according to claim 5, wherein said object is an artifact that humans use in gaming.

11. (original) A method according to claim 5, wherein said screen is capable of withstanding severe impacts of commonly used sports gaming objects used for the games in question.

12. (original) A method according to claim 5, wherein said display is viewed in 3-D by a user.

13. (currently amended) A method according to claim 5, wherein said images are digitized by the at least one TV camera.

14. (original) A method according to claim 13, wherein said TV camera is proximate said screen.

15. (original) A method according to claim 5, wherein said object is a projectile whose trajectory is determined.

16. (original) A method according to claim 5, wherein the location of a player or portion thereof is continuously tracked, and varying video imagery is displayed as a result of locations determined.

17. (original) A method according to claim 5, wherein data concerning location of points on both persons and objects used in the game are determined.

18. (original) A method according to claim 5, wherein location of a point is determined in 3 dimensions.

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19. (original) A method according to claim 5, wherein the point on a person is on the person's head, finger, hand or foot.

20. (original) A method according to claim 5, wherein said point is of high contrast relative to its surroundings.

21. (currently amended) A method of gaming or simulation comprising the steps of:

providing a screen or other surface on which video images are displayed;

obtaining, using at least one TV camera, one or more ~~optical~~ images containing data concerning one or more persons playing said game or simulation, and objects used in said game or simulation;

from said image data, determining the location of a one or more points on said persons or objects;

from said determined locations, determining the relation of one or more points on said player or object to the displayed image on the screen; and

controlling the displayed image in accordance with said relation so determined.

22. (original) A method according to claim 21, wherein said object is an artifact that humans use in gaming.

claims 23-26 are cancelled

27. (currently amended) A method of gaming or simulation comprising the steps of:

providing a screen or other surface on which video images are displayed;

obtaining, using at least one TV camera, one or more ~~optical~~ images containing data concerning one or more persons playing said game or simulation, or of objects used in said game or simulation;

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from said image data, determining the location of one or more points on said persons or objects;

using said determined locations, determining the relation of one or more points on said player or object to the displayed image on the screen; and

controlling the displayed image in accordance with said relation so determined.